

**REMARKS**

**I. Introduction**

In response to the pending Office Action, Applicants have amended claim 1 to further clarify the subject matter of the present disclosure. Support for the amendment to claim 1 may be found, for example, on page 10, lines 15-17 of the specification. No new matter has been added.

A Request for Continued Examination (RCE) is being filed concurrently with this amendment.

Applicants respectfully submit that all pending claims are patentable over the cited prior art for the reasons set forth below.

**II. The Rejection Of Claims 1-9 Under 35 U.S.C. § 103**

Claims 1-9 are rejected under 35 U.S.C. § 103(a) as unpatentable over Matsuba et al. (WO 02/035554). Applicants respectfully submit that Matsuba fails to render the above cited claims obvious for at least the following reasons.

With regard to the present disclosure, claim 1 recites an electrically conductive paste comprising main components including a metal powder, a glass frit, and an organic vehicle, wherein the metal powder comprises spherical particles (A) having an average primary-particle diameter of 0.1 to 1  $\mu\text{m}$  and spherical particles (B) having an average primary-particle diameter of 50 nm or less, and the content of spherical particles (A) is in the range of 50 to 99 wt % and the content of spherical particles (B) is in the range of 1 to 50 wt % relative to the total amount of metal particles; the content of the glass frit is in the range of 0.1 wt % to 15 wt % to the total

amount of the glass frit and the metal powder; and the organic vehicle contains a cellulose resin or a thermally-decomposable acrylic resin.

One feature of the present disclosure is that the conductive paste is a sintering-type conductive paste made with a cellulose resin or a thermally decomposable resin. Acrylic resins are generally classified into three types: thermosetting resin, thermoplastic resin and thermally decomposable resin. To exemplify this, Applicants have attached a partial translation of a technical paper “Synthesis, Designing and Development for new use of Acrylic Resin” by Chyubu Management Development Center Publication Division to show these types of acrylic resins, cited as Appendix A.

In contrast to the present disclosure, Matsuba discloses a conductive metal paste containing two types of metal particles that uses a thermosetting acrylic resin as an organic binder (see paragraphs 0016 and 0024 of U.S. 2004/0004209). In addition, Matsuba also discloses a conductive metal paste containing only one type of metal particles; that is, ultrafine metal particles with a very small average particle diameter of 1 to 100nm. In this case, thermosetting resins, thermoplastic resins or thermally decomposable resins are described as resin component acting as an organic binder (see paragraphs 0036 and 0042 of U.S. 2004/0004209). However, the invention having only ultrafine metal particles is utilized with the thermally decomposable resin, not the paste having two types of metal particles. Nor is there a suggestion that the paste having two particles may utilize a thermally decomposable acrylic resin. As such, Matsuba fails to suggest a conductive paste having two types of metal particles and a binder comprised of a cellulose resin or a thermally-decomposable resin.

Accordingly, Matsuba fails to disclose or suggest claim 1 of the present disclosure of an electrically conductive paste having two types of metal particles and thermally-decomposing resins or cellulose resin as resin component acting as an organic binder.

Furthermore, Matsuba discloses a compound (A) which has a group containing a nitrogen, oxygen or sulfur atom and capable of coordinate-bonding to a metal element contained in the ultrafine metal particles and a compound component (B) having reactivity with the group containing a nitrogen, oxygen or sulfur atom as for the compound which has the containing a nitrogen, oxygen or sulfur atom when heated. The compound (A) covers the surface of each ultrafine metal particle to contribute to retention of its stabilized colloidal state. The compound component (B) can remove the covering layer formed with the compound (A) on the surface of each ultrafine metal particle from the particle at the time of heating. Accordingly, the product having desired conductivity is obtained at a relatively low temperature.

In contrast, the present disclosure does not use compounds such as nitrogen, oxygen or sulfur. In the present disclosure excellent conductivity is obtained to optimize three parameters of spherical particles (A), spherical particles (B) and glass frit. As such, it is clear that Matsuba fails to render claim 1 of the present disclosure obvious.

As is well known in patent law, in order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. As Matsuba fails to disclose an electrically conductive paste comprising main components including a metal powder, a glass frit, and an organic vehicle, having the above cited concentrations and sizes, and that the organic vehicle contains a cellulose resin or a thermally-decomposable acrylic resin, it is

clear that Matsuba fails to render claim 1 obvious. Therefore, it is respectfully requested that the rejection of claim 1 under § 103 be withdrawn.

**III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

**IV. Conclusion**

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication of which is respectfully solicited.

**Application No.: 10/531,697**

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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